Space Weather Forecast

Issued on Monday, 07 March 2022 at 01:05 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of G1/Minor Geomagnetic Storm initially. Daily Chance of R1 Minor Radio Blackouts throughout. Possibly a weak CME arriving on 10th March.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was low over the period, with occasional common-class flares observed. These flares peaked with a small common-class flare at 06/0237UTC from a sunspot region in the sun's northeast quadrant.

There are currently four numbered sunspots on the visible disc. AR2960 is the largest and most complex region on the disc, and has recently developed into a beta-gamma configuration. Otherwise, this region appears to be stable for now. AR2957 has shown growth in its leading spots and areal extent, but remains a Dai/Beta-Gamma configuration. AR2962 and AR2961 are both small and stable. AR2958 has now faded, but was responsible for the M2.0 X-ray flare on 02 March, which produced a coronal mass ejection (CME).

There are possibly two Earth-directed CMEs in the forecast. The first may result in a glancing blow early on day 1 (7 March). The second is not expected to arrive until possibly on day 4 (10 March), however, there is still some uncertainty and confidence is low.

Solar Wind / Geomagnetic Activity: Earth is currently experiencing a slightly elevated fast wind from a coronal hole. The magnetic field was moderate before easing to background, though aligned almost completely counter to Earth's field for long periods, this resulted in a G1 minor geomagnetic storm interval at 06/0600-0900UTC. Otherwise, mostly Quiet to Unsettled, with an Active interval.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be low, with further occasional common-class flares and a chance of moderate-class. There is a bright region seen in far-side imagery, which is due to rotate onto the Earth facing disc by day 2 (08 March).

Solar Wind / Geomagnetic Activity: There remains a slight chance of G1/Minor Storm from the current fast wind at first on day 1 (7 March), with this risk further bolstered as a result of the uncertain influence of a glancing blow from a CME. Activity should wane into days 2 and 3 (8-9 March), but with the caveat into day 4 (10 March) due to the uncertainty surrounding a further CME arrival.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	5	10	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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